

Mini-test for Ch 6.2, 6.3, 6.5

Math 104, Spring 2009

You must show your work. No credit is given if no supporting work is shown. No partial credit is given.

1. What is the volume of the solid of revolution generated by rotating the region enclosed by the graphs of $y = x^3$ and $x = y^3$, between $x = 0$ and $x = 1$, around the axis of rotation $y = -1$?

A.) $\frac{17}{14}\pi$ B.) $\frac{91}{70}\pi$ C.) $\frac{51}{35}\pi$ D.) $\frac{17}{15}\pi$ E.) $\frac{12}{7}\pi$ F.) $\frac{41}{28}\pi$

2. What is the volume of a solid of revolution generated by rotating around the y -axis the region enclosed by the graph of $y = e^{-x^2}$, the x -axis, and the lines $x = 0$ and $x = 2$?

- A.) πe^{-4} B.) $\pi(1 - e^{-4})$ C.) πe^{-2} D.) $\pi(1 - e^{-2})$ E.) πe^4 F.) $\pi(e^4 - 1)$

3. Find the *average value* of the function

$$f(x) = \frac{\ln(x^2)}{x},$$

on the interval $1 \leq x \leq e$.

- A.) 0 B.) $\frac{1}{e}$ C.) $\frac{e-1}{e}$ D.) $\frac{e}{e-1}$ E.) $\frac{1}{e-1}$ F.) 1